

CLAIMS

1. A method for filtration of exhaust gases, whereby all or part of the particles present in said exhaust gases are retained on filtration means and are burnt by the action of a combustion catalyst, characterized in that it essentially consists in obstructing at least a portion of the filtration means as soon as the temperature θ_g of the exhaust gases to be filtered becomes equal to or lower than a threshold temperature θ_s , so as to limit, indeed to avoid, the cooling of the obstructed portion and to maintain same at a temperature θ_o that is equal to or greater than θ_s , up to the time when θ_g again becomes greater than θ_s , and thereby to permit accelerated regeneration of this obstructed portion of the filtration means.
2. The method as claimed in claim 1, characterized in that various portions of the filtration means are successively each subjected to the obstruction/regeneration sequence for each variation of θ_g between a value v_1 that is equal to or greater than θ_s , a value v_2 equal to or lower than θ_s , and again a value v_3 equal to or greater than θ_s , $v_1 =$ or $\neq v_3$, so as to permit a uniform and continuous regeneration of the filtration means.
3. The method as claimed in claim 1, characterized in that the obstruction of a portion of the filtration means consists in preventing the flow of the exhaust gases in at least 30%, preferably in at least 50%, and even more preferably in 50 to 75% of the filtration means, this percentage being expressed as a percentage by volume.
4. The method as claimed in claim 1, characterized in that $\theta_s = 250^\circ\text{C}$ or 300°C .

5. The method as claimed in claim 1, characterized in that the exhaust gases are produced by a supercharged diesel engine and in that the datum parameters, that is the temperature θ_g of the exhaust gases and the threshold temperature θ_s , are given indirectly by the boost pressure and/or the engine speed and/or the backpressure upstream of the filtration means, the threshold boost pressure being preferably equal to 2.5% of the maximum boost pressure of the engine.

6. The method as claimed in claim 1, characterized in that the filtration means consist of at least two - preferably at least three - filter cartridges, each equipped with an obstructor, two of the three cartridges that the filtration means preferably comprise constituting the obstructed portion of the filtration means when $\theta_g \leq \theta_s$.

7. A device for filtration of exhaust gases comprising at least one catalysis means, means for filtration (3) of said exhaust gases, disposed in a reaction chamber (4) in the path of the exhaust gas stream produced by an engine (21), said device being characterized in that the filtration means (3) consists of at least two assemblies each comprising a catalyst support (2) adjacent a filter cartridge equipped with a flow obstruction means (5).

8. The device as claimed in claim 7, characterized by the installation of a means for recirculating the exhaust gases (16) at the engine intake (20) the operation of which is associated with the cutoff of the flow in one or a plurality of the cartridges when the engine is not accelerated, so that the increase in backpressure generated automatically opens a valve that permits this recirculation of the exhaust gases.

9. The device as claimed in either of claims 7 and 8, characterized in that each of the filter cartridges has a flow obstruction means (5), disposed upstream or downstream, controlled by an electronic computer which
5 takes account of all the engine operating conditions, in order to isolate at least one cartridge each time the accelerator position is at zero (not accelerated).

10. The device as claimed in one of claims 7 to 9,
10 characterized in that the filtration means consists of at least three cartridges with a flow obstruction means (5) on each of them, controlled by an electronic computer which takes account of all the engine operating conditions, in order to isolate, in turn, at
15 least two cartridges when the engine is not accelerated, and to isolate the cartridge that filtered the gases in the non-accelerated position, each time the engine is accelerated.

20 11. The device as claimed in one of claims 7 to 10, characterized in that the flow obstruction means disposed on each filter cartridge comprises a small calibrated orifice (24) to maintain a very low flow rate.

25 12. The device as claimed in one of claims 7 to 11, characterized by the installation of a system for post-injection of diesel into the exhaust gases, via an atomizer (11), upstream of the filtration device and
30 the catalysts, controlled by an electronic computer which takes account of all the engine operating conditions, this diesel post-injection system possibly being associated with an exhaust gas recirculation system (16), (17).

35 13. The device as claimed in claim 12, characterized in that the diesel injected contains an organometallic combustion catalyst, supplied or not from a specific tank.